



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,767	11/22/2000	Tsuyonobu Hatazawa	09792909-4673	2706

26263 7590 07/10/2006

SONNENSCHN NATH & ROSENTHAL LLP  
P.O. BOX 061080  
WACKER DRIVE STATION, SEARS TOWER  
CHICAGO, IL 60606-1080

EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/718,767

Applicant(s)

HATAZAWA ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6 and 8-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

***Claim Rejections - 35 USC § 103***

2. Claims 1, 5, 6, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaloner-Gill (U.S. Patent 5,445,856) in view of Bullock et al (U.S. Patent 5,219,676) in view of Gozdz et al (U.S. Patent 5,607,485).

Regarding claim 1, Chaloner-Gill teaches a nonaqueous electrolyte battery comprising a lithium metal anode (see column 3, line 40). The battery may be a spirally-wound “jelly roll” type cell (see col. 3, line 45). Regarding claim 11, the battery is a secondary battery (see col. 3, line 31). With regard to claim 1, as shown in Figure 1, the battery element (10) is contained in an outer covering member composed of a laminated film (5) and is sealed by heat seals. The laminated film has two outer covering members, each having a recess therein (see Figs. 3 and 4). The laminate may be in the form of a single sheet, with the first and second covering members folded together and heat-sealed (see claims 8 and 17 of Chaloner-Gill). Regarding claims 1, 5, and 6, the battery comprises a gas absorbing material which is mixed with a resin material and extruded (i.e., molded) to form a gas absorbing member which forms one of the inner layers of the laminate (see col. 2, lines 48-63). Regarding claim 1, the gas absorbing material is present in a first gas absorbable member (in member 30) and in a second gas absorbable member (in member 31) (see Figs. 1, 4, and 5). Each of the first and second members is “adjacent” the wound edges of the electrode assembly (see Fig. 4). In the preferred embodiments, the laminate has a thickness of less than about 500 microns or less than about 250 microns (see col. 9, line 39). In the case of the latter, the thickness of each layer is preferably 20-30 microns (see col. 9, line 42). The gas absorbing material may comprise an activated carbon material (see col. 8, line

13) or silica gel (see col. 9, line 11). Regarding claim 1, although the reference does not teach that the recesses in the laminate sheets are "preformed," this is a process limitation that is given little patentable weight since it does not limit the structure of the claimed product. See MPEP §2113.

The reference further does not expressly teach that the gas absorbing material is present in an amount of 0.1 to 95 wt. percent on a basis of a weight of the resin material, or that the gas absorbing members have a thickness of between 1-500 microns, as recited in claim 1.

However, the artisan would be motivated to use a suitable amount of gas absorbing material based on the size of the battery and/or electrode element, thereby rendering the claimed range obvious. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). In this case, it is known that an amount of gas absorbing material can be selected based upon the size of the battery, as shown by column 6, lines 26-35 of Bullock et al.:

The amount of the gel will vary from battery size to battery size within the guidelines of being a sufficient quantity to absorb all water vapor produced during the self-discharge reactions. For normal 12V automobile batteries having six cells, the amount could range between about 50 grams to 300 grams. One skilled in the art could readily select a desiccant quantity by knowing the battery size, plate construction and volume of electrolyte left in the battery after the dumping step.

Although Bullock relates to lead-acid batteries, its teachings regarding the battery size would be applicable to all batteries employing a gas absorbing agent. Accordingly, the artisan would be motivated to use a suitable amount of gas absorbing material in the battery of Chaloner-Gill, thereby rendering the range of claim 1 obvious.

Additionally, the thickness range recited in claim 1 is not considered to distinguish over the references. Claim 1 recites that the members have a thickness of between 1-500 microns. As

noted above, Chaloner-Gill teaches that in a seven-layer construction, each laminate sheet preferably has a thickness of less than about 500 microns (or less than about 250 microns). In the case of 500 microns, each sheet would have a thickness of about 70 microns. As such, this disclosure fairly suggests the claimed range of 1-500 microns.

Chaloner-Gill further does not expressly teach that the electrolyte is a gel electrolyte comprising vinylidene fluoride-hexafluoropropylene (PVDF:HFP) copolymer (claims 1 and 7), that the negative electrode contains a carbon intercalation material (claims 8, 9), or that the positive electrode contains a composite oxide of lithium and a transition metal (claim 10).

The patent of Gozdz et al is directed to a lithium secondary battery. The battery may contain a lithium manganese oxide positive electrode, a carbon negative electrode (see Example 8), and a gel electrolyte containing a PVDF:HFP copolymer and 20-70 wt% of a plasticizer containing an electrolytic salt (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Gozdz et al. provides the artisan sufficient motivation to use these materials in the battery of Chaloner-Gill. In column 2, line 30, Gozdz et al. teach the following:

**The present invention provides a means for avoiding the disadvantages of prior electrolytic cell compositions and constructions by enabling the ready and economical preparation of strong, flexible polymeric electrolytic cell membranes which will readily retain electrolyte salt solutions and remain functional over a range extending well below room temperature.**

As such, the artisan would be motivated to use the electrolyte of Gozdz, as well as the electrode materials, in the battery of Chaloner-Gill.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chaloner-Gill in view of Bullock et al. in view of Gozdz et al. as applied to claims 1, 5, 6, and 8-11 above, and further in view of Wedlake (U.S. Patent 4,269,905).

Chaloner-Gill does expressly disclose that the gas absorbable material is a carbon molecular sieve, as recited in claim 4.

Wedlake is directed to electrochemical cells having a casing containing a layer of molecular sieve material. The molecular sieve may comprise materials such as zeolite and carbon (col. 3, line 59 et seq.).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the carbon molecular sieve of Wedlake in the gas absorbable member of Chaloner-Gill. In the abstract, Wedlake discloses that "this invention involves associating a micromolecular sieve carrier with the cell to sorb such contents when they escape, to reduce the severity of undesired reactions of such contents." As such, the artisan would be motivated to use the materials disclosed by Wedlake, such as carbon molecular sieve, in the gas absorbable member of Chaloner-Gill in hopes of obtaining these advantages.

***Response to Arguments***

4. Applicant's arguments filed June 20, 2006 have been fully considered but they are not persuasive. Applicant states that "Gozdz's cell separator membrane is not a gel electrolyte and does not comprise a gel electrolyte." However, it is submitted that, although Gozdz does not expressly use such terminology, the separator of Gozdz is inherently a gelled electrolyte. As stated above, the polymer matrix of Gozdz et al. comprises a copolymer of PVDF. This material is inherently a gel-forming material, as described at column 4, line 1 of Oliver et al (U.S. Patent 5,639,573). The Oliver patent is directed to gel electrolytes for use in secondary batteries. The electrolyte of Oliver, as well as that of Gozdz, and as well as that disclosed and claimed in the instant application, is made of a polymer matrix of PVDF or copolymer thereof and a plasticizer comprising a high-boiling organic solvent and a lithium salt. Since the electrolytes of Oliver and Gozdz contain substantially identical materials, and Oliver expressly identifies his electrolyte as "gelled," the electrolyte of Gozdz must inherently be gelled as well.

Applicant further cites Example 8 of Gozdz. It is noted at the end of this Example, the reference discloses that "the following examples demonstrate the variants available for utilizing the present *polymeric electrolyte/separator membrane* film materials" (emphasis added). Thus, it is seen that Gozdz uses the term "electrolyte" as well as "separator" in describing the polymer film, thus further supporting the position that the membrane is a gelled electrolyte.



***Conclusion***

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

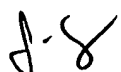
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

Art Unit: 1745

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau

Primary Examiner

Art Unit 1745

July 3, 2006